H. FREEDMAN.

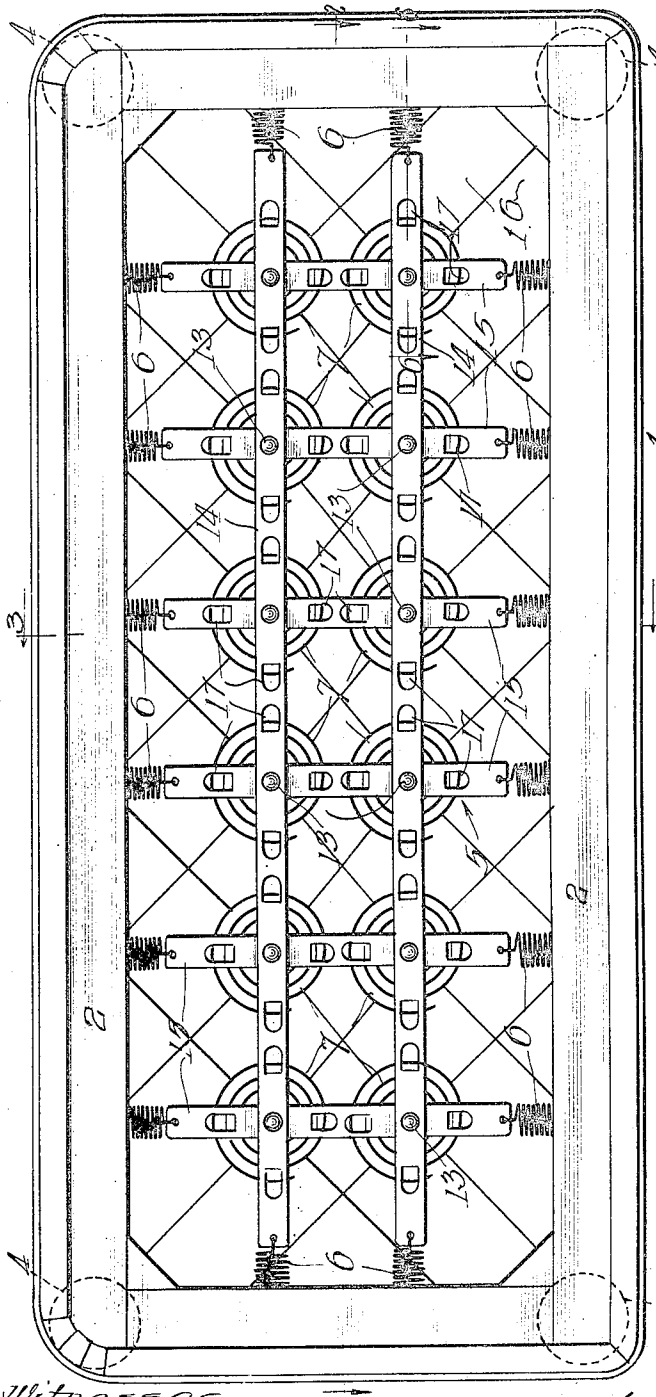
SPRING STRUCTURE.

APPLICATION FILED JULY 17, 1919.

1,351,748.

Patented Sept. 7, 1920.

2 SHEETS—SHEET 1.



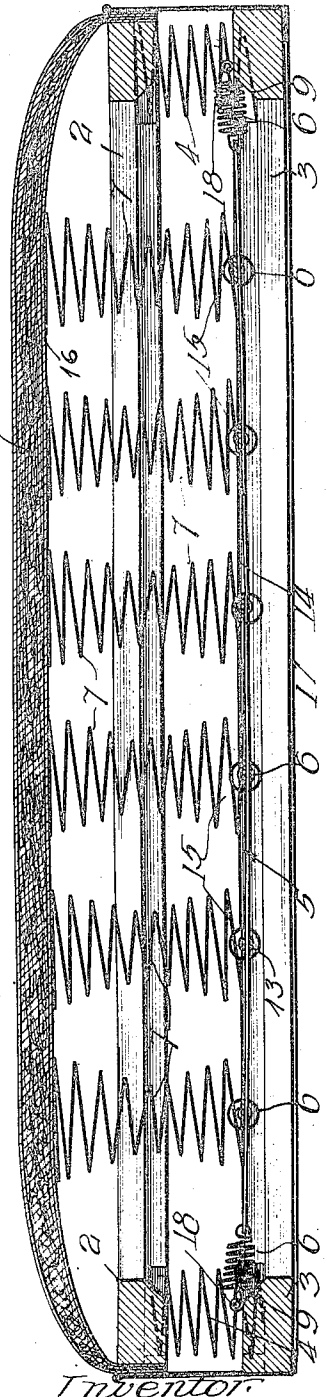


FIG. 2.

Witnesses
Harry A. Lubate
Fred M. Davis

Inventor
Hyman Freedman,
By Rummler & Rummler, Attys

H. FREEDMAN.

SPRING STRUCTURE.

APPLICATION FILED JULY 17, 1919.

1,351,748.

Patented Sept. 7, 1920.

2 SHEETS—SHEET 2.

Fig. 3.

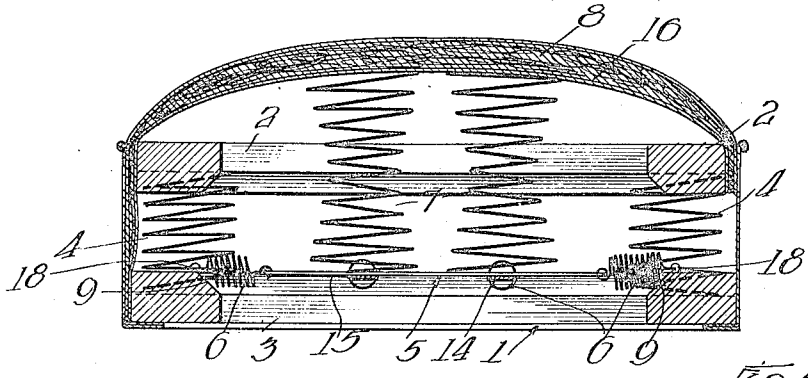


Fig. 4.

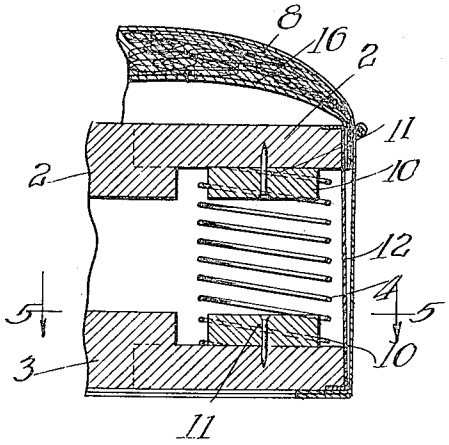


Fig. 5.

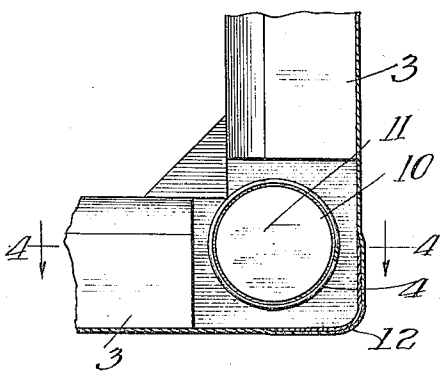
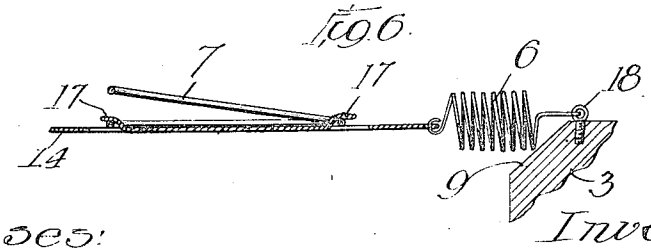


Fig. 6.



Witnesses:

Harry R. L. White.

Fred M. Dowe

Inventor:

Hyman Freedman,

By Rummler & Rummler,

Attys.

UNITED STATES PATENT OFFICE.

HYMAN FREEDMAN, OF CHICAGO, ILLINOIS.

SPRING STRUCTURE.

1,351,748. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed July 17, 1919. Serial No. 311,467.

To all whom it may concern:

Be it known that I, HYMAN FREEDMAN, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spring Structures, of which the following is a specification.

This invention relates to spring structures of the nature of seats, cushions, and the like, and especially to spring seats for automobiles.

The main objects of the invention are to provide an improved form and arrangement of the constituent parts of the structure in such manner as to provide a seat better adapted than other devices heretofore made for use in vehicles; to provide an improved yielding connection for superimposed frame parts and a system of upholstering springs in connection with said frames adapted to provide a yielding seat under all ordinary conditions of load and especially to insure a yielding front.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Figure 1 is a plan of the underside of a spring seat.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 1.

Fig. 4 is a section of one corner of the seat on the line 4—4 of Fig. 5.

Fig. 5 is a horizontal section on the line 5—5 of Fig. 4.

Fig. 6 is a section on the line 6—6 of Fig. 1, showing merely a fragment illustrating the connection of the helical springs to the lower frame.

In the construction shown in the drawings, the seat 1 comprises a pair of horizontally disposed frames 2 and 3, disposed one over the other as shown in Figs. 2 and 3, in combination with four heavy corner springs 4, a thin framework 5 stretched on helical springs 6 across the lower frame 3, and a plurality of upright coiled springs 7 extending upward from said framework 5 to support the curled hair or other upholstering material 8 with which the upper part of the seat is finished.

The frames 2 and 3 are of oblong rectangular shape and have their inner adjacent edges beveled at 9 to accommodate the helical springs 6. Sockets 10 are provided at the corners of said frames to receive the ends of the corner springs 4. Round shoulders 11 are provided within said sockets to assist in holding the ends of the springs in place. Tension means in the form of vertical corner straps 12 are provided to limit the separation of said frames and to hold the corner springs 4 in compression. The framework or body part 5 may to advantage be made of thin narrow strips of sheet metal, preferably riveted together at points where they cross one another, as at 13. Each of the longitudinal strips 14, as well as the transverse strips 15, is supported at its ends by one of the springs 6.

The deep upholstering springs 7 have their lower ends fixed to said framework concentric with the several points of intersection indicated at 13 on Fig. 1. The upper ends of the springs 7 are secured to the fabric 16, or they may be merely corded together in any effective manner adapted to secure them in their duly spaced relation, as will be understood. The lower ends of said springs 7 are preferably secured by means of clips 17 struck up from the body of the strips 14 and 15.

The outer ends of the helical springs 6 are secured to screw eyes 18 set in the upper face of the lower frame 3 adjacent to the bevel 9. The downward pressure of the vertical springs 7 augments the tension on springs 6 and forces the framework 5 downward somewhat below the upper face of the lower frame 3, but the thickness of said lower frame is sufficient to prevent any ordinary load from forcing the framework 5 down to or below the plane of the lower side of frame 3.

It will be seen that in use the operation of the seat and its various parts is as follows: A normal load placed on the seat causes ready yielding compression of the relatively light springs 7 with comparatively little effect on the heavy corner springs 4 and also with but little effect on the helicals 6. A heavier load further depresses the springs 7, causing substantial lengthening of the helicals 6 and corresponding lowering of the floating spring rest 5. If a very heavy load is applied, the whole upper frame 2 is depressed by reason of the yielding of the corner springs 4. The seat is so designed respecting its springs, and particularly the corner springs 4, that

no ordinary load ever causes the upper frame to be depressed sufficiently to produce a jolt.

By the foregoing arrangement and operation, it will be seen that the maximum of cushioning effect is provided for within the limited depth of the seat or cushion 1, with the result that a most comfortable and easy riding seat is provided. The various parts of the seat are all either of standard commercial form or may be readily standardized for the purpose of commercial efficiency in manufacture.

Although the parts described are all exceedingly durable and the seat may be made in a very substantial form, still it is adapted for ready replacement of parts and repairs, the helicals 6 being adapted for ready disconnection if required.

Although but one specific embodiment of this invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims.

I claim:

1. In a spring seat structure, upper and lower peripheral frames secured in convergently yielding relation to each other, said structure including a plurality of coiled springs disposed in compression between said frames, centrally shouldered sockets being provided on one of said frames to receive the ends of said springs respectively for holding the latter in place against lateral displacement, tension means to limit the divergence of said frames, a plurality of medially disposed coiled springs, a resilient support stretched across said lower frame whereon the medial springs rest, and upholstering secured at its edges to said upper frame and held in upwardly bulging position by said medial springs.

2. An oblong, rectangular upholstered spring cushion of compositely yielding character, adapted for interchangeable use in automobile seats, said cushion comprising a pair of similar open rigid frames spaced apart, one over the other in yielding relation and two mutually independent systems or sets of springs carried by the lower frame and disposed to be wholly and at all times above the lower side of said lower frame, one set being disposed medially and projecting above the upper frame to directly and most responsively support the upholstering as well as the lighter loads thereon and the initially applied parts of heavier loads, and the other springs being arranged peripherally and directly between said frames to support the upper frame and to yieldingly stabilize the cushion as a whole when subjected to an overload for the first mentioned springs, the inner set of springs including transversely disposed spring means stretched across the upper part of the lower frame and a plurality of upstanding springs supported thereon.

Signed at Chicago this 10th day of July, 1919.

HYMAN FREEDMAN.